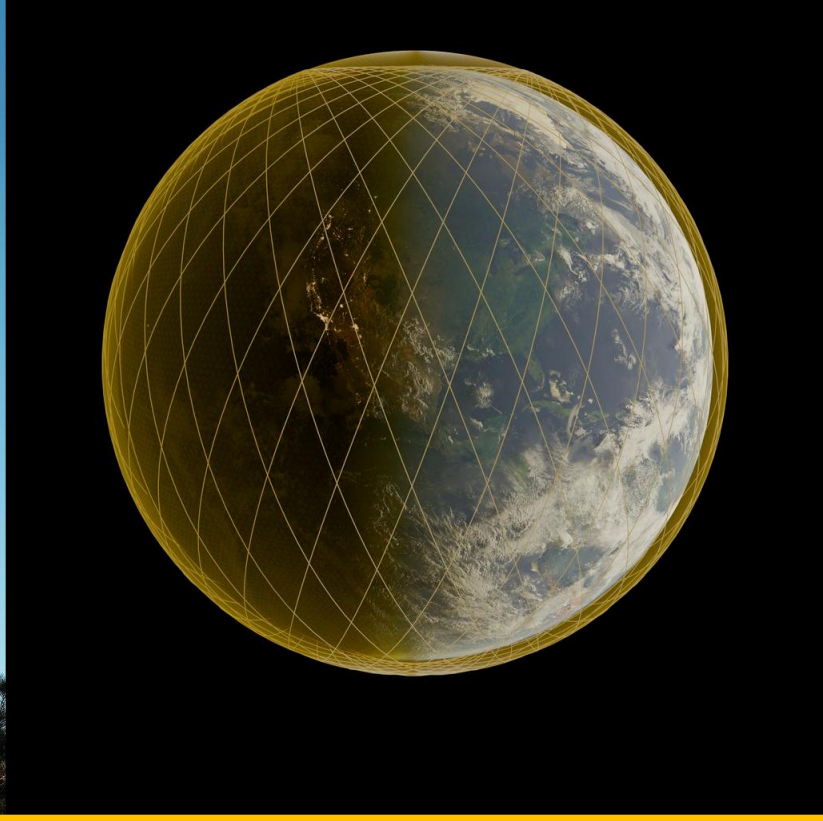
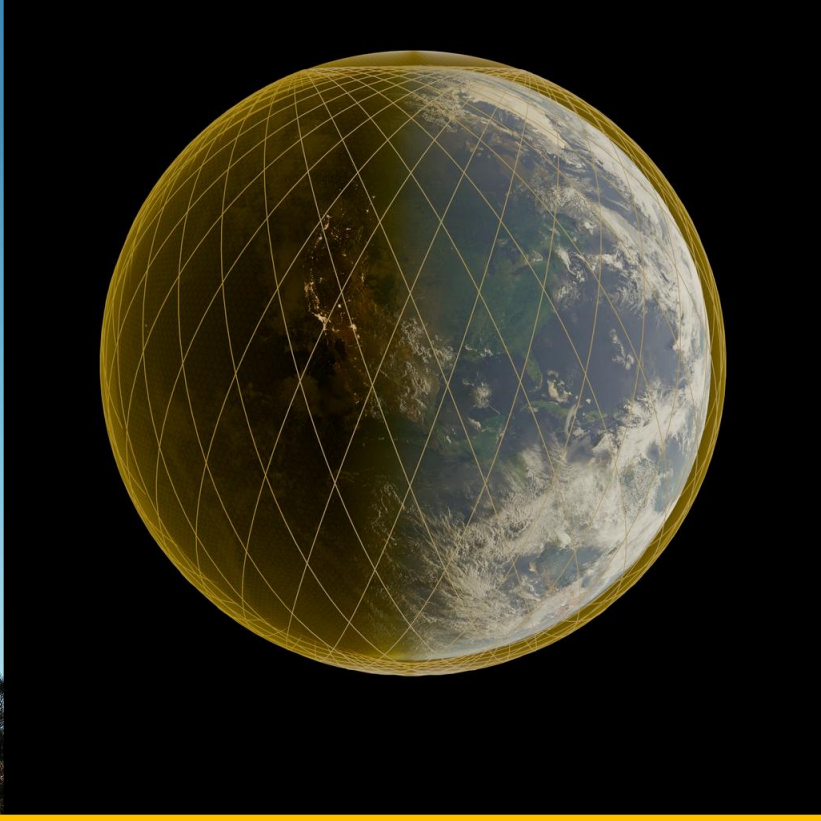
Golden Dome



Golden Dome (missile defense system)

The Golden Dome is a proposed multi-layer defense system for the United States, intended to counter "the threat of ballistic, hypersonic, and cruise missiles" posed to the mainland. The architecture has been viewed as similar to the Brilliant Pebbles concept of the 1980s.

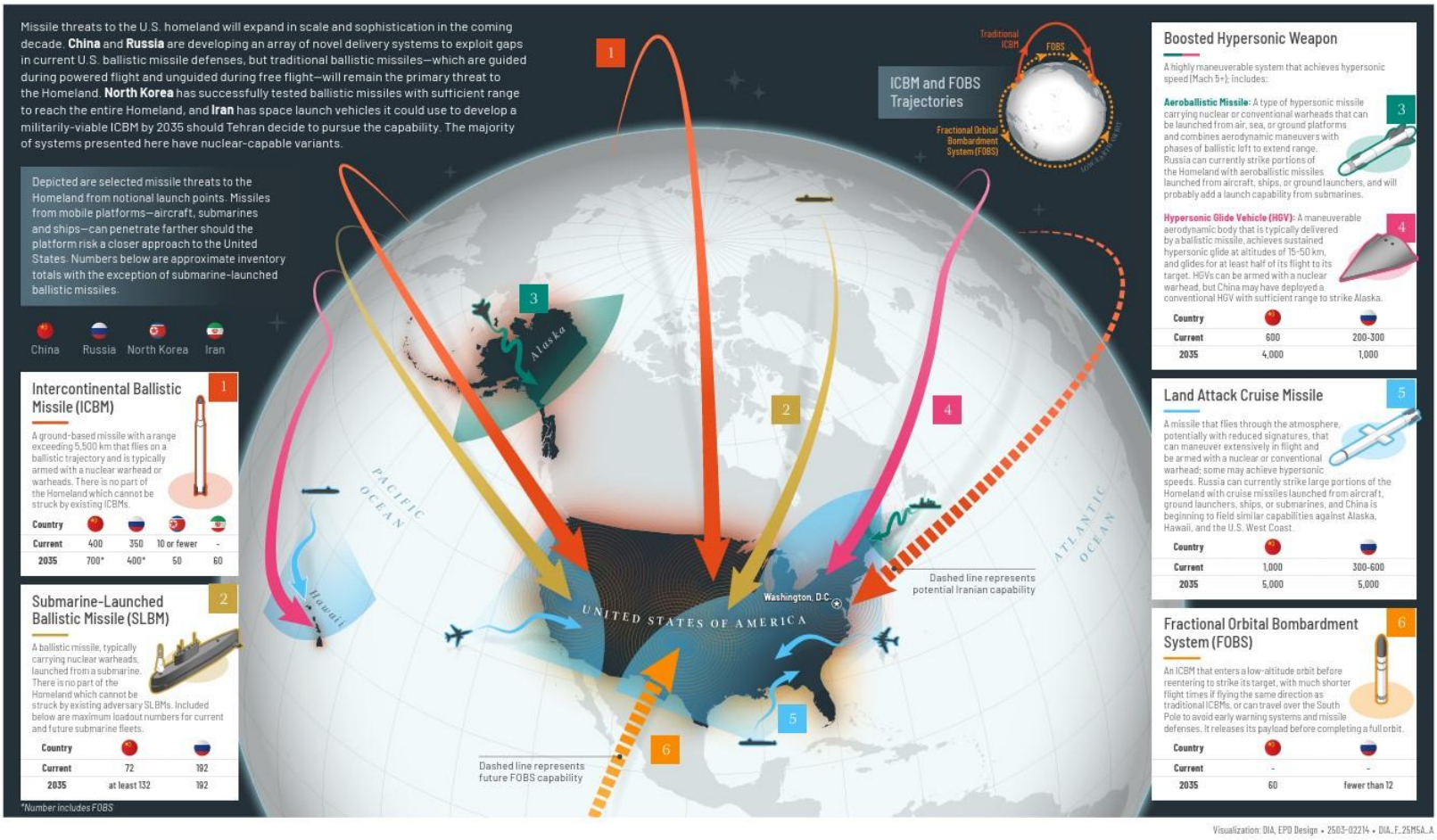
On January 27, 2025, Donald Trump signed an executive order directing the United States Armed Forces to construct a missile defense system. It has been compared to the Iron Dome air defense system in Israel, as well as the Strategic Defense Initiative, which was proposed by Ronald Reagan in 1983. The White House has called the program both a dome and a shield,[7] potentially misnomers in that the system would rely on thousands of space-based weapons or "interceptors" distributed around the entire Earth, rather than a fixed dome positioned over the United States.[8] Interceptors are kept staged near the edge of the atmosphere, where they must maintain quick orbits to avoid falling back to Earth.



Golden Dome (missile defense system)

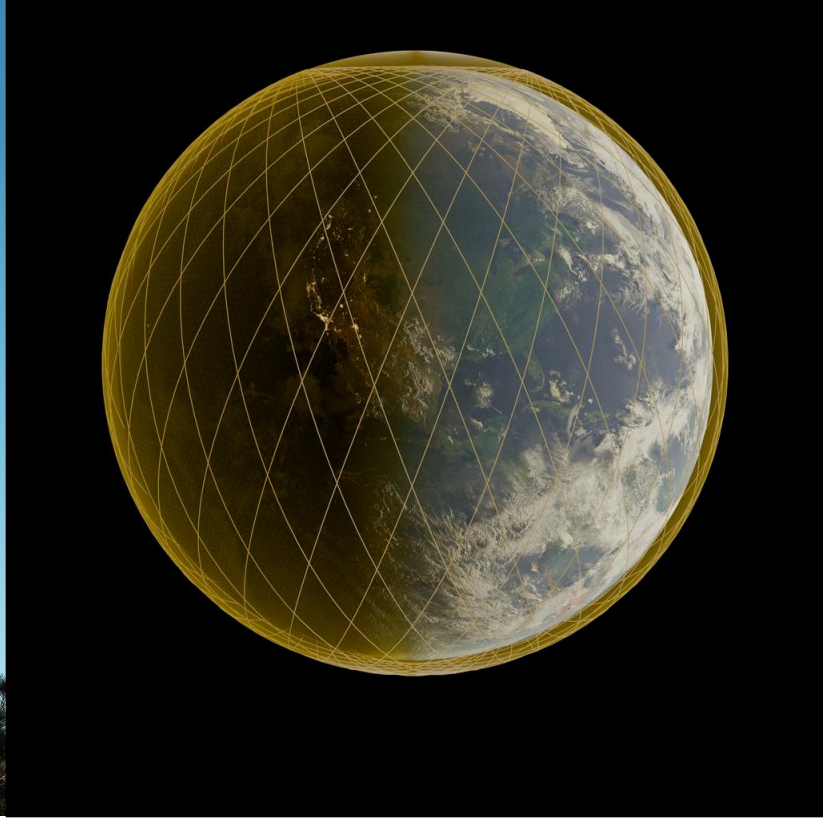
Their rapid motion allows only a small fraction to be positioned in the right place to act on any given threat, a flaw that critics argue makes the concept less efficient than traditional regional missile defenses such as Iron Dome. Beyond intercepting other missiles, Trump has said that space-based weapons would be "obviously" used for offensive purposes as well.

The modern groundwork for Golden Dome was laid by the former Deputy of Technology of Strategic Defense Initiative and USD (R&E), Michael D. Griffin, who formed the Space Development Agency in 2017 during the first Trump Administration. Griffin long advocated for reusable launch vehicles to make the mass launching of weapons into space economically feasible. While the original Strategic Defense Initiative's attempts at this were short-lived, with the DC-X failing after a series of test flights, Griffin later encouraged and promoted funding of commercial reusable launch vehicles, which have since proven successful.


DEFENSE INTELLIGENCE AGENCY
Missile threats to the U.S. homeland will expand in scale and sophistication in the coming decade. China and Russia are developing an array of novel delivery systems to exploit gaps in current U.S. ballistic missile defenses, but traditional ballistic missiles—which are guided during powered flight and unguided during free flight—will remain the primary threat to the Homeland. North Korea has successfully tested ballistic missiles with sufficient range to reach the entire Homeland, and Iran has space launch vehicles it could use to develop a militarily-viable ICBM by 2035 should Tehran decide to pursue the capability. The majority of systems presented here have nuclear-capable variants.
Depicted are selected missile threats to the Homeland from notional launch points. Missiles from mobile platforms—aircraft, submarines and ships—can penetrate farther should the platform risk a closer approach to the United States. Numbers below are approximate inventory totals with the exception of submarine-launched ballistic missiles.
China
Russia
North Korea
Iran
Intercontinental Ballistic Missile (ICBM)
A ground-based missile with a range exceeding 5,500 km that flies on a ballistic trajectory and is typically armed with a nuclear warhead or warheads. There is no part of the Homeland which cannot be struck by existing ICBMs.
Country
Current 400 350 10 or fewer -
2035 700* 400* 50 60
Submarine-Launched Ballistic Missile (SLBM)
A ballistic missile, typically carrying nuclear warheads, launched from a submarine. There is no part of the Homeland which cannot be struck by existing adversary SLBMs. Included below are maximum loadout numbers for current and future submarine fleets.
Country
Current 72 192
2035 at least 132 192
*Number includes FOBS
ICBM and FOBS Trajectories
Traditional ICBM
FOBS
Fractional Orbital Bombardment System (FOBS)
Boosted Hypersonic Weapon
A highly maneuverable system that achieves hypersonic speed (Mach 5+); includes:
Aeroballistic Missile: A type of hypersonic missile carrying nuclear or conventional warheads that can be launched from air, sea, or ground platforms and combines aerodynamic maneuvers with phases of ballistic loft to extend range. Russia can currently strike portions of the Homeland with aeroballistic missiles launched from aircraft, ships, or ground launchers, and will probably add a launch capability from submarines.
Hypersonic Glide Vehicle (HGV): A maneuverable aerodynamic body that is typically delivered by a ballistic missile, achieves sustained hypersonic glide at altitudes of 15–50 km, and glides for at least half of its flight to its target. HGVs can be armed with a nuclear warhead, but China may have deployed a conventional HGV with sufficient range to strike Alaska.
Country
Current 600 200-300
2035 4,000 1,000
Land Attack Cruise Missile
A missile that flies through the atmosphere, potentially with reduced signatures, that can maneuver extensively in flight and be armed with a nuclear or conventional warhead; some may achieve hypersonic speeds. Russia can currently strike large portions of the Homeland with cruise missiles launched from aircraft, ground launchers, ships, or submarines, and China is beginning to field similar capabilities against Alaska, Hawaii, and the U.S. West Coast.
Country
Current 1,000 300-600
2035 5,000 5,000
Fractional Orbital Bombardment System (FOBS)
An ICBM that enters a low-altitude orbit before reentering to strike its target, with much shorter flight times if flying the same direction as traditional ICBMs, or can travel over the South Pole to avoid early warning systems and missile defenses. It releases its payload before completing a full orbit.
Country
Current - -
2035 60 fewer than 12
Alaska
Hawaii
PACIFIC OCEAN
ATLANTIC OCEAN
UNITED STATES OF AMERICA
Washington, D.C.
Dashed line represents potential Iranian capability
Dashed line represents future FOBS capability
Visualization: DIA, EPD Design • 2503-02214 • DIA...F..25MSA..A

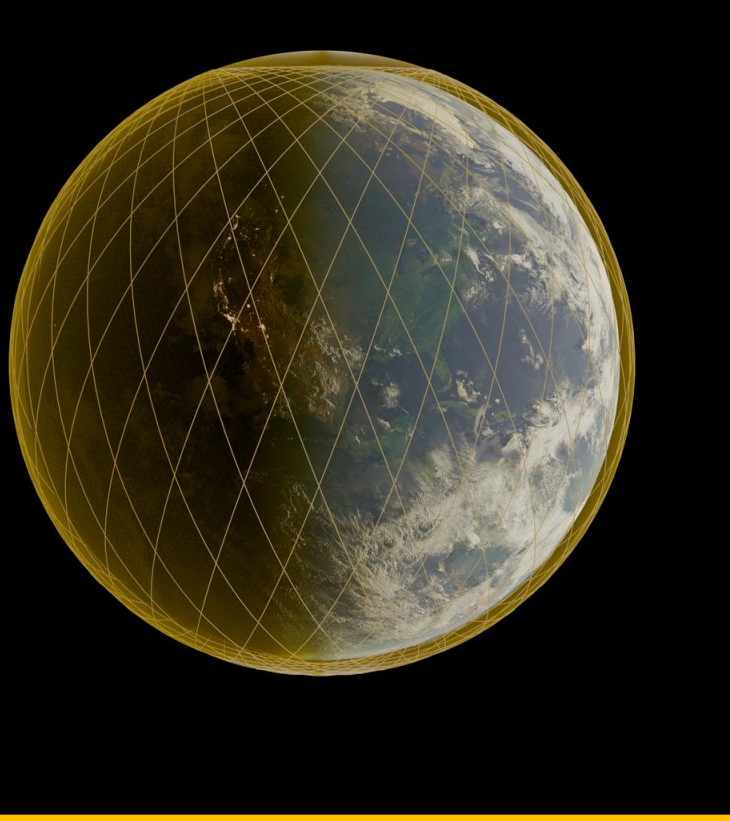
Golden Dome was extensively advocated for in the Heritage Foundation's Project 2025, stating that SpaceX's development of Starlink proves that a space-based "overlayer" of thousands of networked satellites and interceptors is now possible. Donald Trump has also repeatedly mentioned the missile shield concept in campaign speeches during the 2024 presidential election, often to mixed reception.

In May 2025, forty-two members of Congress formally requested the DoD Inspector General to review Elon Musk's involvement in Golden Dome. They cited concerns over deviations from standard acquisition processes and a dome subscription model that could "give Musk undue influence over national security." Another key conflict of interest involves four-star General Terrence J. O'Shaughnessy, former head of U.S. homeland missile defense, who now reports directly to Musk at SpaceX.



After traveling to Russia with a young Musk in 2001 to study ICBMs, Griffin steered $2 billion in NASA contracts to Musk's newfound space company. SpaceX has since secured missile-tracking satellite contracts through Griffin’s SDA as part of its Starshield program. Griffin also helps lead a SpaceX spinoff, Castelion, that seeks to mass-produce hypersonic weapons.

Trump stated the project would be completed within three years and cost approximately $175 billion. General Michael A. Guetlein of the U.S. Space Force has been appointed to lead the initiative. A down payment of $25 billion for Golden Dome was included in a Republican reconciliation spending bill. The Congressional Budget Office estimated that it could cost between $161 billion and $542 billion over 20 years, while Republican Senators involved in the program predicted the end cost would be "trillions of dollars."Defense contractors, including SpaceX, Palantir, Anduril and Lockheed Martin are reportedly vying for involvement, while experts have expressed doubts over the timeline, feasibility, and cost.



Golden Dome (missile defense system)

Lockheed Martin stated that their goal would be to deliver the system by the end of 2026, leveraging Space-Based Interceptors and hypersonic interceptors.

DEFENSE INTELLIGENCE AGENCY

Missile threats to the U.S. homeland will expand in scale and sophistication in the coming decade. **China** and **Russia** are developing an array of novel delivery systems to exploit gaps in current U.S. ballistic missile defenses, but traditional ballistic missiles—which are guided during powered flight and unguided during free flight—will remain the primary threat to the Homeland. **North Korea** has successfully tested ballistic missiles with sufficient range to reach the entire Homeland, and **Iran** has space launch vehicles it could use to develop a militarily-viable ICBM by 2035 should Tehran decide to pursue the capability. The majority of systems presented here have nuclear-capable variants.

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China Russia North Korea Iran

Intercontinental Ballistic Missile (ICBM) 1

A ground-based missile with a range exceeding 5,500 km that flies on a ballistic trajectory and is typically armed with a nuclear warhead or warheads. There is no part of the Homeland which cannot be struck by existing ICBMs.

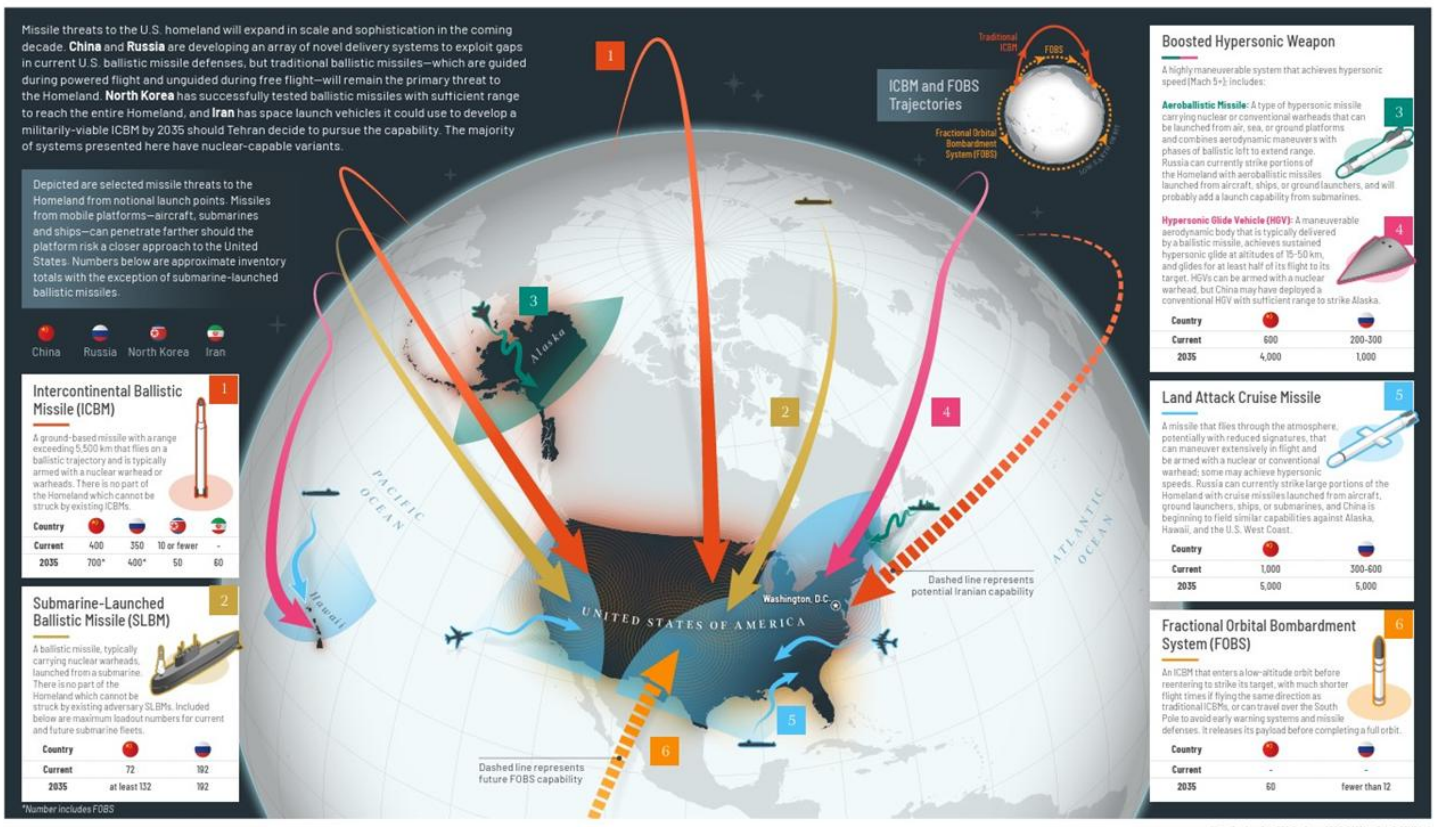
Country				
Current	400	350	10 or fewer	-
2035	700*	400*	50	60

Submarine-Launched Ballistic Missile (SLBM) 2

A ballistic missile, typically carrying nuclear warheads, launched from a submarine. There is no part of the Homeland which cannot be struck by existing adversary SLBMs. Included below are maximum loadout numbers for current and future submarine fleets.

Country		
Current	72	192
2035	at least 132	192

*Number includes FOBS



ICBM and FOBS Trajectories

Traditional ICBM
FOBS
Fractional Orbital Bombardment System (FOBS)

Boosted Hypersonic Weapon

A highly maneuverable system that achieves hypersonic speed (Mach 5+); includes:

Aeroballistic Missile: A type of hypersonic missile carrying nuclear or conventional warheads that can be launched from air, sea, or ground platforms and combines aerodynamic maneuvers with phases of ballistic loft to extend range. Russia can currently strike portions of the Homeland with aeroballistic missiles launched from aircraft, ships, or ground launchers, and will probably add a launch capability from submarines. 3

Hypersonic Glide Vehicle (HGV): A maneuverable aerodynamic body that is typically delivered by a ballistic missile, achieves sustained hypersonic glide at altitudes of 15–50 km, and glides for at least half of its flight to its target. HGVs can be armed with a nuclear warhead, but China may have deployed a conventional HGV with sufficient range to strike Alaska. 4

Country		
Current	600	200-300
2035	4,000	1,000

Land Attack Cruise Missile 5

A missile that flies through the atmosphere, potentially with reduced signatures, that can maneuver extensively in flight and be armed with a nuclear or conventional warhead; some may achieve hypersonic speeds. Russia can currently strike large portions of the Homeland with cruise missiles launched from aircraft, ground launchers, ships, or submarines, and China is beginning to field similar capabilities against Alaska, Hawaii, and the U.S. West Coast.

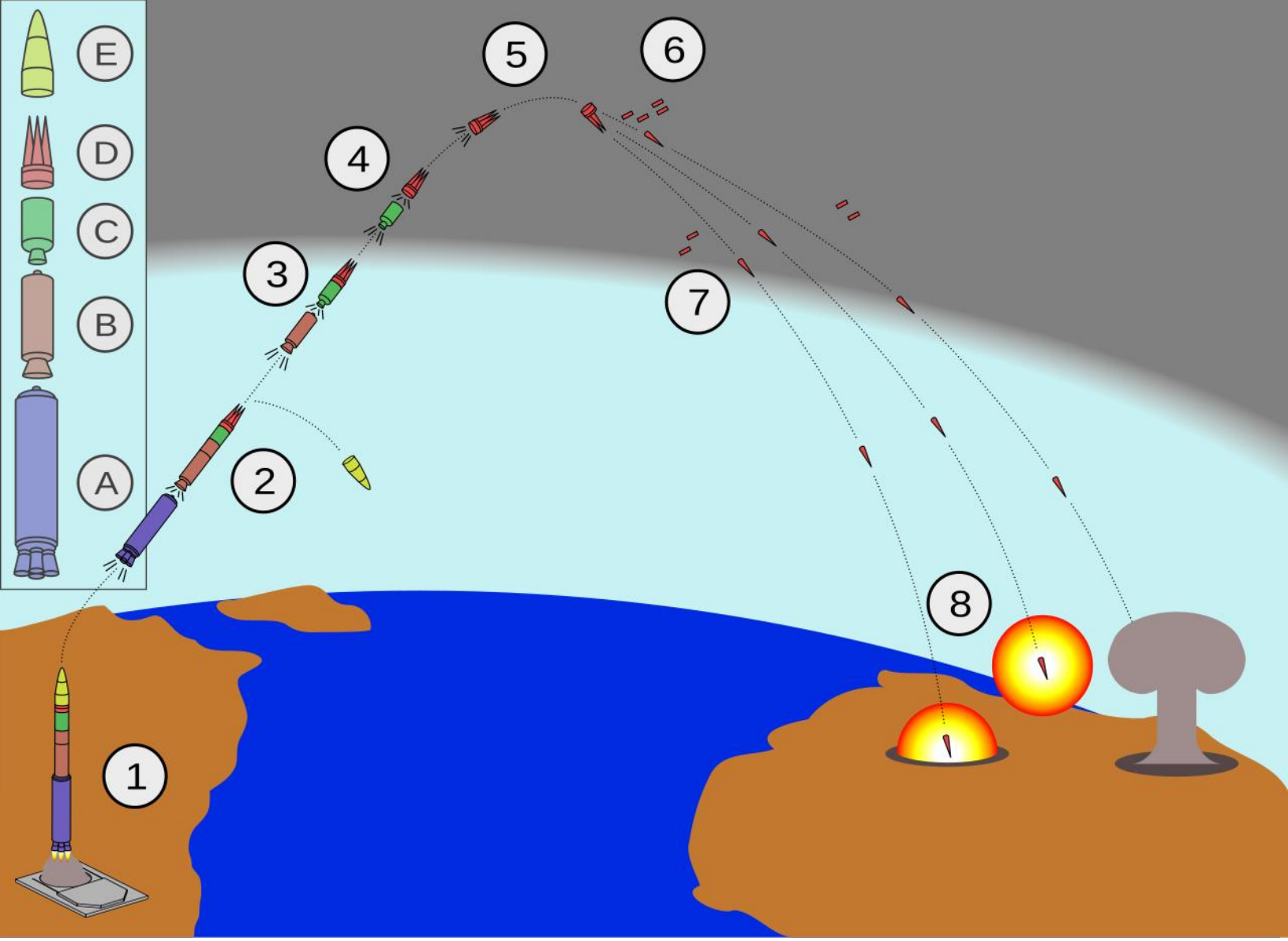
Country		
Current	1,000	300-600
2035	5,000	5,000

Fractional Orbital Bombardment System (FOBS) 6

An ICBM that enters a low-altitude orbit before reentering to strike its target, with much shorter flight times if flying the same direction as traditional ICBMs, or can travel over the South Pole to avoid early warning systems and missile defenses. It releases its payload before completing a full orbit.

Country		
Current	-	-
2035	60	fewer than 12

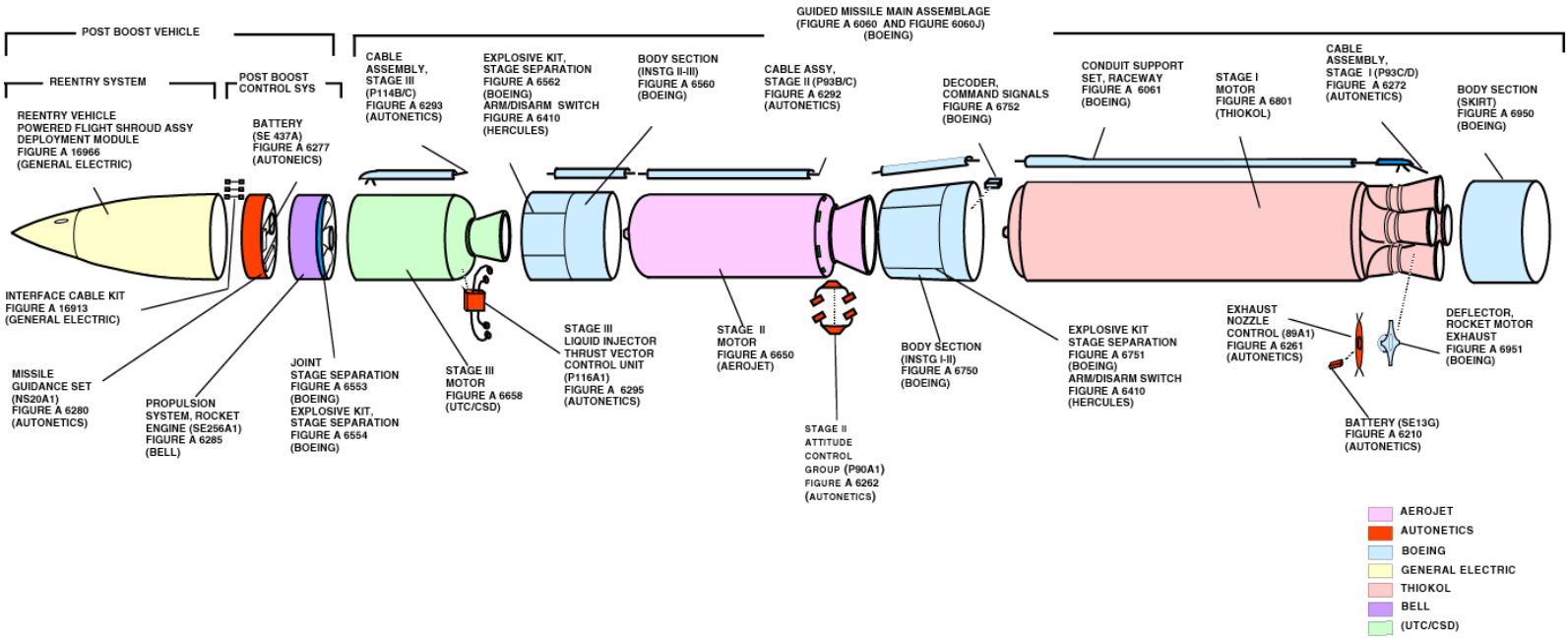
Visualization: DIA, EPD Design • 2503-02214 • DIA_F_25MSA_A



Minuteman-III MIRV launch sequence: 1. The missile launches out of its silo by firing its first-stage boost motor (A). 2. About 60 seconds after launch, the first-stage drops off and the second-stage motor (B) ignites. The missile shroud (E) is ejected. 3. About 120 seconds after launch, the third-stage motor (C) ignites and separates from the second stage. 4. About 180 seconds after launch, third-stage thrust terminates and the post-boost vehicle (D) separates from the rocket. 5. The post-boost vehicle maneuvers itself and prepares for re-entry vehicle (RV) deployment. 6. The RVs, as well as decoys and chaff, are deployed. 7. The RVs (now armed) and chaff re-enter the atmosphere at high speeds. 8. The nuclear warheads detonate.

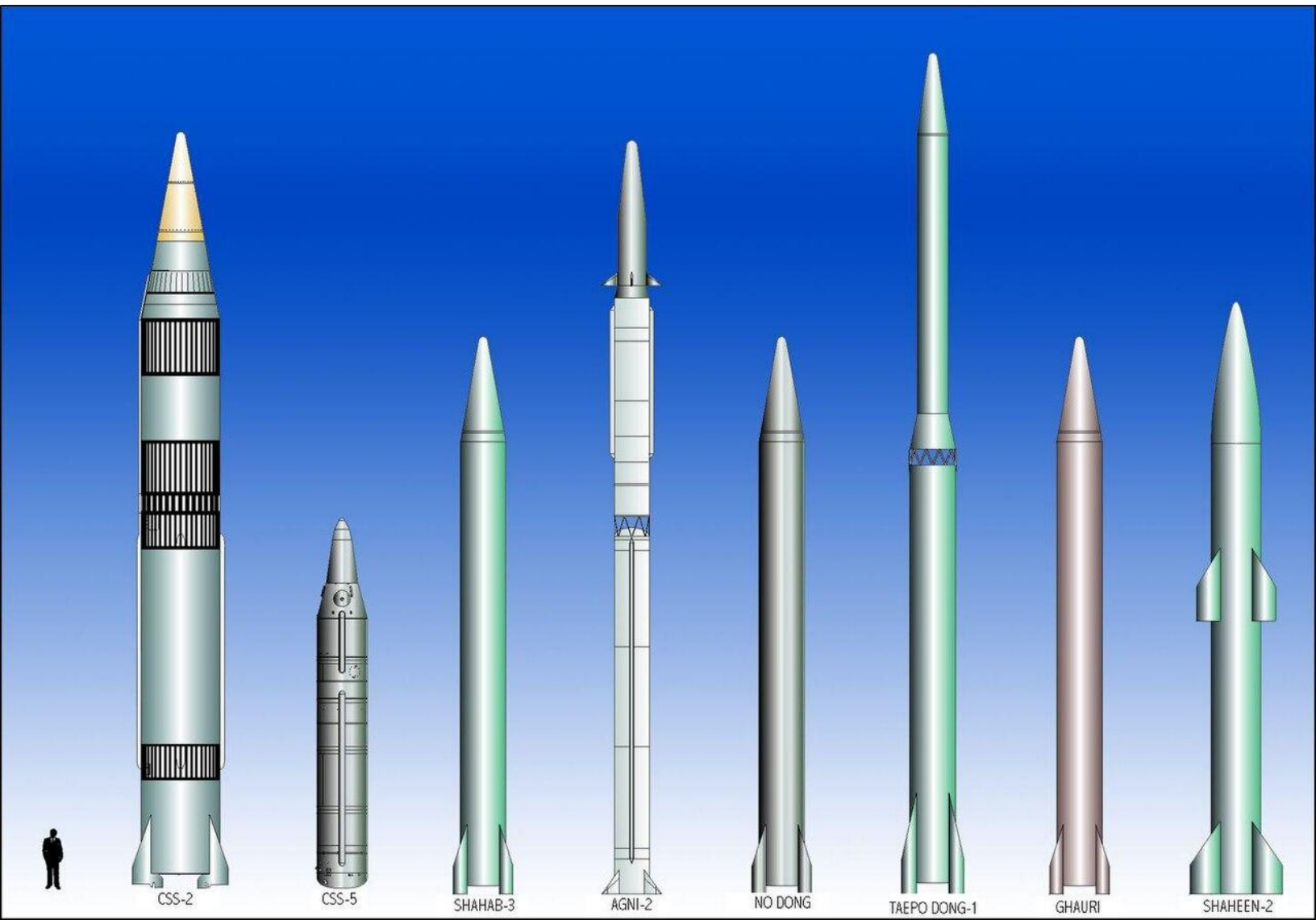
A ballistic missile is a type of missile that uses projectile motion to deliver warheads on a target. These weapons are powered only during relatively brief periods—most of the flight is unpowered. Short-range ballistic missiles (SRBM) typically stay within the Earth's atmosphere, while most larger missiles travel outside the atmosphere. The type of ballistic missile with the greatest range is an intercontinental ballistic missile (ICBM). The largest ICBMs are capable of full orbital flight.

These missiles are in a distinct category from cruise missiles, which are aerodynamically guided in powered flight and thus restricted to the atmosphere


POST BOOST VEHICLE
GUIDED MISSILE MAIN ASSEMBLAGE (FIGURE A 6060 AND FIGURE 6060J) (BOEING)
REENTRY SYSTEM
POST BOOST CONTROL SYS
REENTRY VEHICLE POWERED FLIGHT SHROUD ASSY DEPLOYMENT MODULE FIGURE A 16966 (GENERAL ELECTRIC)
BATTERY (SE 437A) FIGURE A 6277 (AUTONEICS)
CABLE ASSEMBLY, STAGE III (P114B/C) FIGURE A 6293 (AUTONETICS)
EXPLOSIVE KIT, STAGE SEPARATION FIGURE A 6562 (BOEING) ARM/DISARM SWITCH FIGURE A 6410 (HERCULES)
BODY SECTION (INSTG II-III) FIGURE A 6560 (BOEING)
CABLE ASSY, STAGE II (P93B/C) FIGURE A 6292 (AUTONETICS)
DECODER, COMMAND SIGNALS FIGURE A 6752 (BOEING)
CONDUIT SUPPORT SET, RACEWAY FIGURE A 6061 (BOEING)
STAGE I MOTOR FIGURE A 6801 (THIOKOL)
CABLE ASSEMBLY, STAGE I (P93C/D) FIGURE A 6272 (AUTONETICS)
BODY SECTION (SKIRT) FIGURE A 6950 (BOEING)
INTERFACE CABLE KIT FIGURE A 16913 (GENERAL ELECTRIC)
MISSILE GUIDANCE SET (NS20A1) FIGURE A 6280 (AUTONETICS)
PROPULSION SYSTEM, ROCKET ENGINE (SE256A1) FIGURE A 6285 (BELL)
JOINT STAGE SEPARATION FIGURE A 6553 (BOEING) EXPLOSIVE KIT, STAGE SEPARATION FIGURE A 6554 (BOEING)
STAGE III MOTOR FIGURE A 6658 (UTC/CSD)
STAGE III LIQUID INJECTOR THRUST VECTOR CONTROL UNIT (P116A1) FIGURE A 6295 (AUTONETICS)
STAGE II MOTOR FIGURE A 6650 (AEROJET)
STAGE II ATTITUDE CONTROL GROUP (P90A1) FIGURE A 6262 (AUTONETICS)
BODY SECTION (INSTG I-II) FIGURE A 6750 (BOEING)
EXPLOSIVE KIT STAGE SEPARATION FIGURE A 6751 (BOEING) ARM/DISARM SWITCH FIGURE A 6410 (HERCULES)
EXHAUST NOZZLE CONTROL (89A1) FIGURE A 6261 (AUTONETICS)
DEFLECTOR, ROCKET MOTOR EXHAUST FIGURE A 6951 (BOEING)
BATTERY (SE13G) FIGURE A 6210 (AUTONETICS)
AEROJET
AUTONETICS
BOEING
GENERAL ELECTRIC
THIOKOL
BELL
(UTC/CSD)

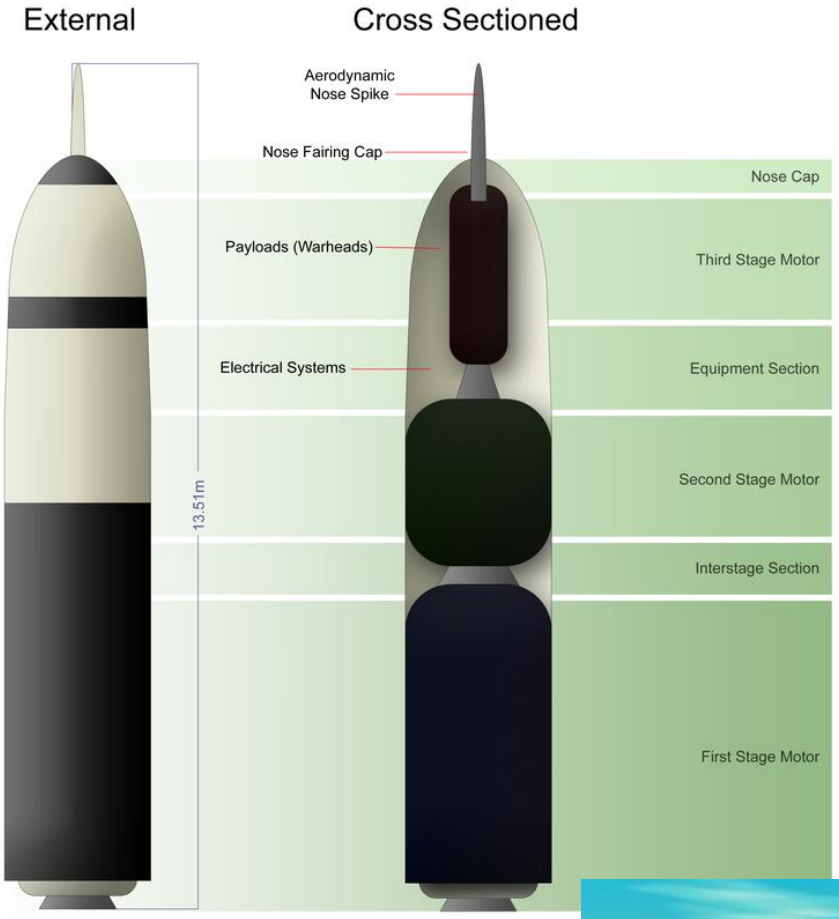
In order to cover large distances, ballistic missiles are usually launched into a high sub-orbital spaceflight; for intercontinental missiles, the highest altitude (apogee) reached during free-flight is about 4,500 kilometers (2,800 mi). A ballistic missile's trajectory consists of three parts or phases: the boost phase, the mid-course phase and the terminal phase. Special systems and capabilities are required to facilitate the successful passage from one phase to the other.

The last phase in the missile's trajectory is the terminal or re-entry phase, beginning with the re-entry of the missile into the Earth's atmosphere (if exoatmospheric) where atmospheric drag plays a significant part in missile trajectory, and lasts until missile impact. Re-entry vehicles re-enter the Earth's atmosphere at very high velocities, on the order of 6–8 kilometers per second (22,000–29,000 km/h; 13,000–18,000 mph) at ICBM ranges. During the beginning of this phase, the missile's trajectory is still relatively well defined, though as the missile reaches the heavier layers of atmosphere it is increasingly influenced by gravity and aerodynamic drag, which can affect its landing.

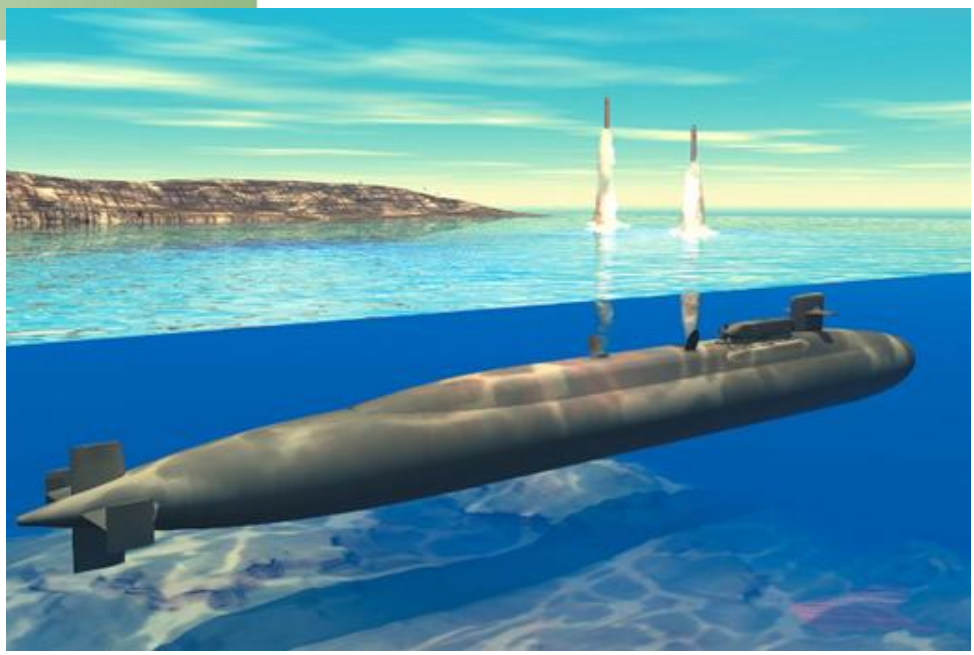


United States

Long-Range Hypersonic Weapon – over 2,775 kilometres (1,724 mi)
OpFires – around 1,609 kilometres (1,000 mi)
Pershing II – 1,770 kilometres (1,100 mi)
PGM-19 Jupiter – 2,400 kilometres (1,500 mi)



Schematic view of a submarine-launched Trident II D5 nuclear missile system, capable of carrying multiple nuclear warheads up to 8,000 km (5,000 mi)



U
S
A

Ubåtar
Ohio
Klass

Spräng-
Kraft

40 000
Hiroshima
Bomber

33 600
Kiloton
Spräng-
styrka

Ohio-klassen är en fartygsklass av kärnvapenbestyckade atomdrivna strategiska robotubåtar konstruerade för USA:s flotta.

USS Ohio (SSGN-726)
USS Michigan (SSGN-727)
USS Florida (SSGN-728)
USS Georgia (SSGN-729)
USS Henry M. Jackson (SSBN-730)
USS Alabama (SSBN-731)
USS Alaska (SSBN-732)
USS Nevada (SSBN-733)
USS Tennessee (SSN-734)
USS Pennsylvania (SSBN-735)
USS West Virginia (SSBN-736)
USS Kentucky (SSBN-737)
USS Maryland (SSBN-738)
USS Nebraska (SSBN-739)
USS Rhode Island (SSBN-740)
USS Maine (SSBN-741)
USS Wyoming (SSBN-742)
USS Louisiana (SSBN-743)

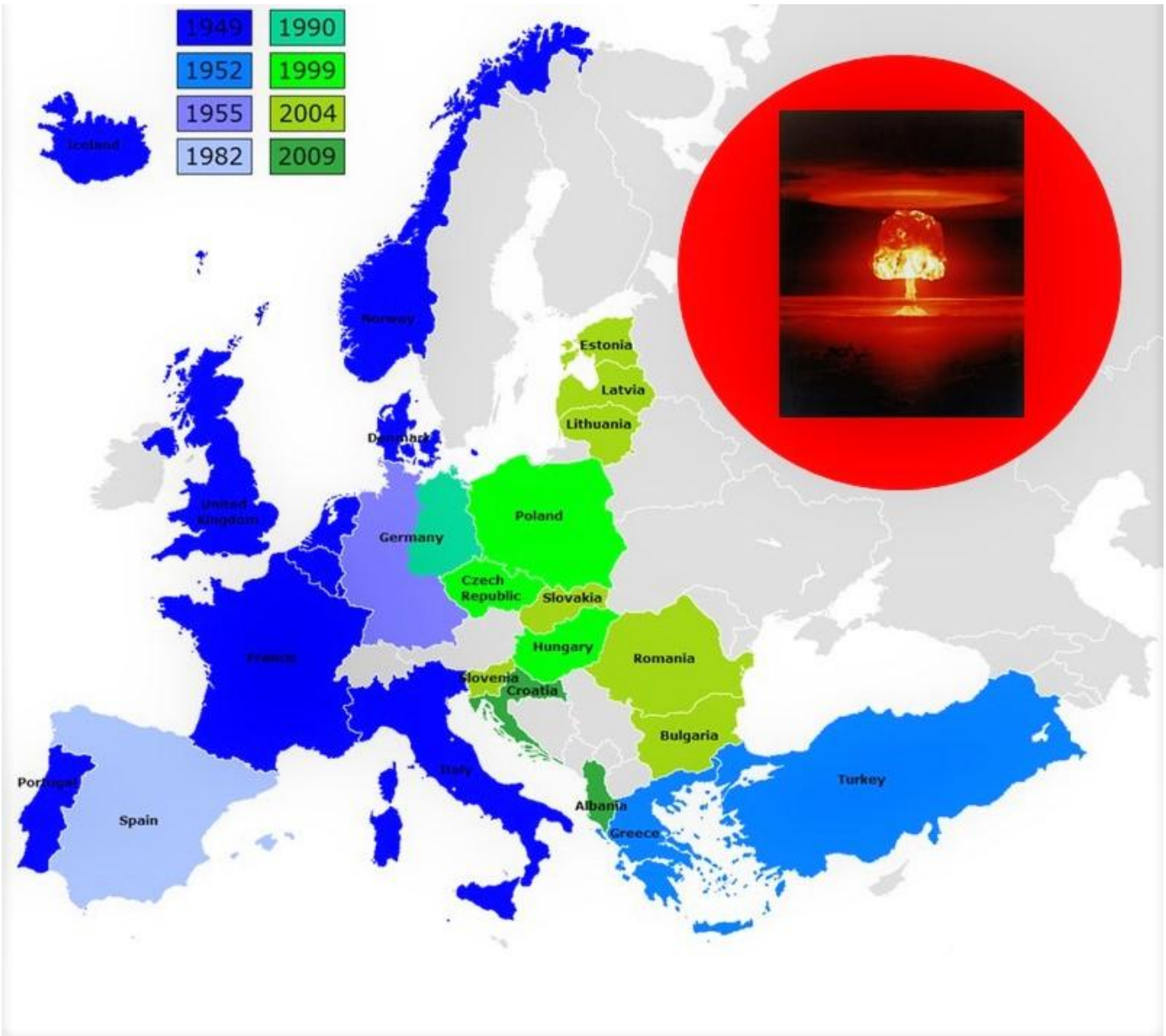
24 × Trident I SSBN-726 till SSBN-733 från konstruktion till omladdning
24 × Trident II SSBN-734 och följande båtar från konstruktion, SSBN-730 till SSBN-733 efter omladdning
22 × 7, totalt 154 UGM-109 Tomahawk SSBN-726 till SSBN-729 efter ombyggnad

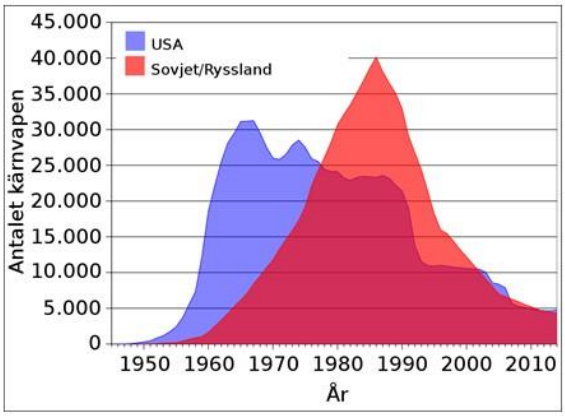
Det första åtta ubåtarna av Ohio-klassen bestyckades med **Trident I robotar**. Man modifierade även några ubåtar av James Madison-klassen och Benjamin Franklin-klassen för att bära Trident I robotar. Dessa ubåtar var tidigare bestyckade med Poseidon robotar. Sprängkraft 8 × 100 kt
1 kiloton = energimängden i 1 000 ton trotyl. 1 kiloton = 4,184×1012 joule = 4,184 terajoule. Atombomben över Hiroshima hade exempelvis en sprängverkan på mellan 15 och 16 kiloton. 1 megaton = energimängden i 1 miljon ton trotyl. Atombomben över Hiroshima hade exempelvis en sprängverkan på c:a 0,015 megaton. 50 megaton, d.v.s. mer än **4 000 gånger kraftigare än Hiroshimabomben**. Är den starkaste testade. Ubåten medför en sprängkraft som 53 Hiroshima bomber. Fjorton ubåtar av Ohio-klassen är bestyckade med 24 stycken Trident II robotar vardera. Även de fyra brittiska ubåtarna av Vanguard-klassen är bestyckade med 16 stycken Trident II robotar vardera. 1200 mil räckvidd för Trident II. 24 st x 100 kt = 2 400 kt per Ubåt x 14 Ubåtar är
33 600 kt sprängkraft totalt. Som 40 000 Hiroshimabomber i 14 Ohio Ubåtar.

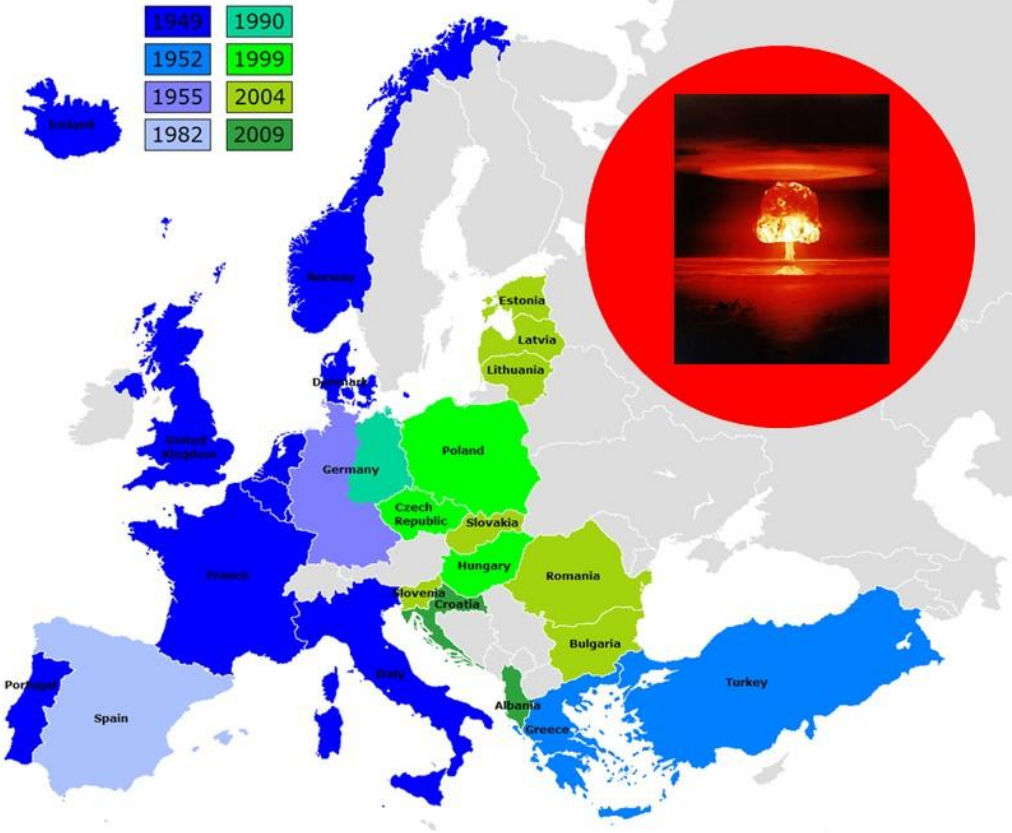
Effekt	1 kt	10 kt	100 kt	1000 kt
Joniserande strålning				
50 % omedelbar temporär utslagning	600 m	950 m	1400 m	2900 m
Joniserande strålning				
50 % fördröjd dödlighet	800 m	1110 m	1600 m	3200 m
Tryckvåg				
50 % utslagna	140 m	360 m	860 m	3100 m
Värmestrålning				
50 % utslagna, andra gradens brännskador genom uniform	369 m	1110 m	3190 m	8020 m

Tabell över räckvidd av verkan vid olika bombstyrkor. För taktiska kärnvapen på fältet är det intressanta "omedelbar utslagning": även om fienden dör av strålsjuka om en vecka, kan han fortfarande vinna striden just nu. Därför används termen "temporär utslagning" om den akuta fasen av strålsjukan, eftersom det är det som är viktigt på fältet. "Temporär" syftar på att en dödligt strålsjuk person kan synbart tillfriskna helt innan sjukdomen går in i slutfasen. En dödlig dos behöver inte vara tillräckligt hög för att orsaka omedelbar utslagning, vilket förklarar varför "temporär utslagning" kräver ett kortare avstånd än "fördröjd död". Ett litet kärnvapen på 10 kiloton ger omedelbart efter explosionen ifrån sig strålning motsvarande 300 miljoner kg naturligt radium. Skador från radioaktivitet kommer i de flesta fall att vara försumbara i förhållande till de oerhörda skadorna från sprängverkan och värmestrålning. För de överlevande och i synnerhet för dem som inte alls drabbades av de direkta effekterna är dock effekterna av radioaktiviteten väsentliga.

14 Ohio Ubåtar kan spränga: 8 mil x 33, 6 = 268 mil, så en cirkel på 268 mil i diameter.





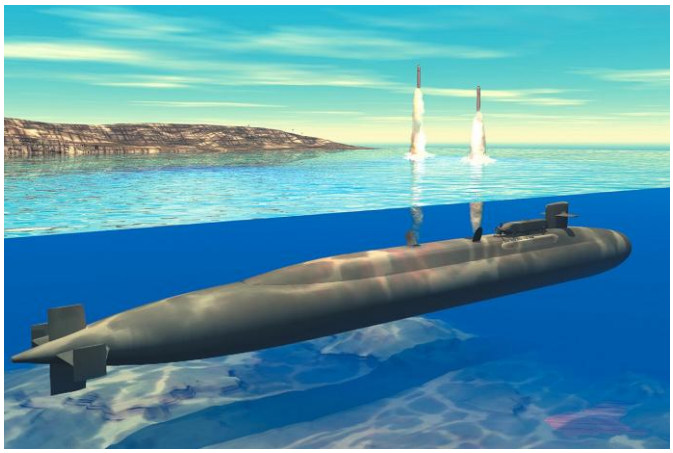


Natos Ubåtar (Atom) med Trident robotar kan tekniskt döda allt liv inom en radie av 300 mil. USA ensamt kan detta. Sprängkraften motsvarar 40 000 Hiroshima bomber och i 33 600 KT. 14 Ubåtar (USA), UK har 4 Ubåtar med liknande robotar 16 st per Ubåt. (extra 6 400 KT). Robotar kan riktas och når mellan 700 – 1200 mil från position för avfyrning.

Ohio Ubåtarna kan spränga en yta motsvarande en cirkelyta som skulle ha 300 mil i diameter. Exempelvis nästan hälften av Rysslands yta.

Tekniskt den Sprängyta som Ohio Ubåtarna kan spränga med sin nuvarande bestyckning

The Ohio class of nuclear-powered submarines includes the United States Navy's 14 ballistic missile submarines (SSBNs) and its 4 cruise missile submarines (SSGNs). Each displacing 18,750 tons submerged, the Ohio-class boats are the largest submarines ever built for the U.S. Navy and are capable of carrying 24 Trident II missiles apiece. They are also the third-largest submarines ever built, behind the Russian Navy's Soviet era 48,000-ton Typhoon class, the last of which was retired in 2023, and 24,000-ton Borei class.



Armament 4 × 21 inch (533 mm) Mark 48 torpedo tubes (Forward Compartment 4th level)
General characteristics (SSBN-726 to SSBN-733 from construction to refueling)

Armament 20[a] × Trident I C4 SLBM with up to 8 MIRVed 100 ktTNT W76 nuclear warheads each, range 4,000 nmi (7,400 km; 4,600 mi)
General characteristics (SSBN-734 and subsequent hulls upon construction, SSBN-730 to SSBN-733 since refueling)

Armament 20 × Trident II D5 SLBM with up to 12 MIRVed W76 or W88 (475 ktTNT) nuclear warheads each, range 6,100 nmi (11,300 km; 7,000 mi)
General characteristics (SSGN conversion)

Armament 22 tubes, each with 7 Tomahawk cruise missiles, totaling 154

14 ballistic missile submarines
40 000 x 1 Hiroshima
Nuclear bomb

Like 40 000
Bombs like that
one in Hisroshima